

CHAPTER 5¹ WATER QUALITY AND SHORELINE PROTECTION PLAN

A. INTRODUCTION

The purpose of this Chapter is to define a broad set of policies for Northumberland County which promote the objectives of the County and the Commonwealth of Virginia to preserve the quality of waters of the Chesapeake Bay and related state waters within the County. Referred to here as the **Water Quality Protection Plan**, this Chapter has been prepared to comply with Section 10.1-2109 of the Virginia Code which in part states:

Counties, cities and towns in Tidewater Virginia shall incorporate protection of the quality of state waters into each locality's comprehensive plan consistent with the provisions of this chapter.

Under the powers of that code section, the Chesapeake Bay Local Assistance Board, CBLAB, was authorized to prepare Regulations which provided guidelines to localities for preparing plans for the protection of the quality of state waters. Among the provisions of those guidelines which are published in the Local Assistance Manual are five objectives of such plans.

They state that *in conjunction with other state water quality programs, local programs shall encourage and promote:*

- • protection of existing high quality state waters and restoration of all other state waters to a condition or quality that will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them*
- • safeguarding the clean waters of the Commonwealth from pollution;*
- • prevention of any increase in pollution;*
- • reduction of existing pollution, and*
- • promotion of water resource conservation in order to provide for the health, safety and welfare of the present and future citizens of the Commonwealth.*

This chapter is designed to further these objectives within the framework of the physical conditions identified in Chapter 1 and goals and strategies of Chapter 2. ~~This chapter supplements and extends the Comprehensive Plan beyond its conventional physical development focus to include provisions designed to preserve the qualities of state waters.~~ The Board of Supervisors recognizes that there may be situations where the requirements of one element of the Comprehensive Plan appear to duplicate, overlap or even supersede another plan element. When addressing a specific planning issue, the Board of Supervisors and the Planning Commission will give appropriate consideration to

¹Filename = Chapter_5Draft

all applicable elements of the Comprehensive Plan ~~as if it were a single volume.~~

Policies are organized below around the following topics related to developing and using land:

Development within or Near Existing Development;

- ~~● Physical factors that influence or constrain development~~
- Development within Areas with Topographic Constraints;
- Development within Areas where Soils will not Support Conventional On-Site Sewage Disposal
- Development within Areas where Soils have Poor Structural Qualities;
- Floodprone Areas, Wetlands and Natural Habitat Areas;
- Chesapeake Bay Act Protected Areas;
- Protection of the County's Groundwater Supply;
- Watershed Protection;
- Shoreline Preservation;
- Use of Waterfront Areas while Preserving Sensitive Environmental Areas;
- Intensively Developed Areas;
- Managing Potential Conflicts between Land Use and Water Quality Protection; and
- Soil and Water Conservation Policies.

~~● Protection of Potable Water Supply~~

~~● Shoreline Erosion and Control~~

~~● Access to State Waters~~

~~● Policies relative to intensively developed areas~~

~~● Policies regarding potential conflict between the land use plan and the protection of the Chesapeake Bay~~

Through the following policies, the Board of Supervisors of Northumberland County will promote the laws, policies and regulations promulgated by the state and federal governments which are designed to enhance the quality of water entering the Chesapeake Bay through tributaries located within the County.

B. POLICIES RELATIVE TO DEVELOPING AND USING LAND WITHIN PHYSICAL CONSTRAINTS

1. Development within or Near Existing Development

Existing development presents both constraints to and opportunities for further development.

Constraints come from the fact that once a major use is established for a property, as a practical matter that use is permanent. There is a very low probability that the facilities erected will be removed and replaced by other uses. The opportunity for development comes from the fact that after an area is partially developed it sets community characteristics which in turn often attract other-additional development ~~of a similar nature.~~

Policies for development in areas within or near existing development are as follows:

- ~~(a) Commercial, institutional and other high intensity uses are encouraged to be located within or near one of the existing villages.~~
- ~~(ba)~~ Villages with greater potential for growth may be considered for installation of public sewerage systems and water supply as development reaches a point where the services ~~is-are~~ financially feasible.
- ~~(eb)~~ New residential development is to be directed to areas where soils and topography are acceptable for development.
- ~~(dc)~~ Development shall be done in such a way as to preserve farmlands, forests, natural resources, historic features and other environmentally-sensitive areas.
- ~~(ed)~~ ~~Large-scale R~~residential development shall be planned using conservation techniques where lot size reductions are permitted if the reductions are compensated by open space, riparian buffers or other amenities. ~~Small-lot subdivisions that occupy all of the land subdivided are discouraged.~~
- ~~(f)~~ ~~Most new residential lots in major subdivisions should be served by new roads built to serve the subdivision. Existing public roads which are designated as primary or principal secondary roads should not be used for the major frontage for lots in subdivisions in order to reduce the conflict between residential driveways and traffic on high-volume public roads. [Move (f) to Chapter 3.]~~
- ~~(ge)~~ Large residential developments should be dispersed throughout the County in order to avoid creating intensively-developed concentrations of development which could eventually require public utilities or other services. This strategy also promotes the preservation of agricultural and forestal lands and reduces the threat of making excessive demands on state waters at any given point.

2. Development within Areas with Topographic Constraints

Land which has slopes in excess of 15 percent (15 feet drop per 100 feet horizontal) is generally classified as having steep slopes for planning purposes. Lands in this category are generally regarded as a deterrent to development but the extent that steep slopes have this effect depends upon the market demand within each community. Normally, developers will avoid steep land because it presents more problems and usually leads to higher costs than development on flatter land. ~~In-Addingddition~~ to ~~its-the~~ difficulty of development, when steep land is combined with soils that are highly erodible, the probability of erosion and costs of erosion control is increased significantly. If the land is located near tidal waters or potential reservoir sites, the resulting erosion can be a serious threat to water quality as well as to the stability of the shoreline. Policies concerning development of steep slopes are:

- (a) Development of land with slopes greater than 15 percent but less than 20 percent shall be permitted provided the proposed development shall have met strict site plan review requirements, and appropriate soil erosion protection and BMPs² are

²Best Management Practices as defined by the Virginia Department of Environmental Quality.

observed. This policy is for the purpose of reducing the potential for erosion or other damage to the underground water supply, to streams, shorelines or sensitive-environmental areas.

- (b) Development of land within the range of 20-25 percent will have the same requirements as slopes of 15-20 percent, and in addition the developer will be required to provide appropriate engineering features necessary to assure that these slopes will be permanently stabilized. It is preferred that lands with slopes of more than 25 percent should remain undisturbed, however or if they must be disturbed, disturbed, they should be stabilized. Subdivisions may be laid out so as to arrange lots in a manner that avoids these slopes. Cluster development is one tool for accomplishing this objective.
- (c) When development is planned on steep slopes, additional land area over the minimum required by regulations may be required in order to: (i) avoid conflict between water supply and sewage disposal locations; ~~(ii) provide adequate space for a back-up septic tank field;~~ (iii) avert infiltration into the water-table aquifer; or ~~(iviii)~~ minimize shoreline erosion.

3. **Development within Areas where Soils will not Support Septic Tanks Conventional On-Site Sewage Disposal**

The research data in Chapter One identifies general soil conditions which are known to have characteristics unfavorable to septic tank development on-site sewage disposal. (Figure 1.45).

-The most critical criterion for this determination is:

1. The percolation capabilities of the soil, which should be neither too slow nor too fast. If percolation is too slow the system will not function properly, and if it is too fast the septage effluent may enter the groundwater without being properly neutralized treated; and-
2. High seasonable water table; the seasonal water table rises closer to the ground surface during the increased rainfall of winter months

The current Health Department regulations are: General policies for these areas are:

- (a) Septic ~~tank~~ drain fields are limited to those areas with a soil permeability of not less than 0.6 inches 5 minutes per inch of water movement ~~per hour~~ nor more than 6.0 inches per hour 120 minutes per inch. ~~In all cases a septic tank drain field must be located at least 100 feet from any conventional well or 50 feet from a "drilled" well. A well of any kind must be located at least 50 feet from any foundation that has been treated for termites.~~
- (b) Drainfield trench bottoms disposing of septic tank effluent must be 36 inches from seasonal water table indicators. Drainfield trench bottoms disposing of secondary effluent must be 24 inches from seasonal water table indicators.
- (~~b~~c) Sewage disposal system location is determined by the Chesapeake Bay Preservation Act where it applies, but no instance not less than 70 feet of any stream or its adjoining wetland that flows into state waters. Septic tanks are not permitted in areas within 100 feet of any stream or its adjoining wetland that flows into state waters. This prohibition applies particularly to land that has a combination of either highly erodible soils or highly permeable soils and slopes in excess of 15 percent.

The County should seek changes in Health Department regulations to provide for enforcement of engineered systems inspections and reporting.

~~development using conventional on-site sewage disposal systems in locations with unfavorable permeability or with excessively high water table.~~

General policies for areas that do not support conventional on-site sewage disposal are:

- (a) Engineered systems may be used in areas where soil percolation does not meet the requirements outlined above if approved by the Health Department. These systems are designed to be site specific.
- (b) Individual engineered systems require regular maintenance and should be inspected regularly by a Certified Inspector in accordance with the manufacturer's specifications. These reports should be provided by the individual owner to the Health Department.
- (c) Major subdivisions or other large-scale developments shall not be permitted in areas where soils are known to be unsuitable for ~~septic tanks on-site sewage disposal~~ unless the development is connected to a public or private sewerage system or an acceptable engineered system is provided. These systems shall be inspected regularly by a Certified Inspector in accordance with the manufacturer's specifications and the reports provided to the Health Department.
- (d) In subdivisions or other large-scale developments with mass remote drain fields, the Health Department may require a dilution area adjacent to the drain field to reduce nitrate loading. Individual residential uses may be permitted in areas where soils are generally not suitable for septic tanks areas only after the Health Department certifies that the soils will accommodate a primary septic tank field and a backup field and that no wetland or other environmentally sensitive area is at risk.
- (e) In cases where ~~septic tanks are installed in these areas after approval by~~ the Health Department has issued an operation permit, these systems, the installation, whether residential or non-residential, shall include a water conservation plan that includes water-saving devices such as low volume toilets and water-saver shower heads. The use of garbage disposals is discouraged

4. **Development within Areas where Soils have Poor Structural Qualities**

The primary structural quality of soil is its potential for volume change when subjected to a loss or gain of moisture. This is called "shrink-swell" characteristics. Volume changes occur mainly because of the interaction of clay mineral with water, and the amount of change varies with the amount and type of clay minerals in the soil.

Northumberland County's soils generally do not have serious problems with shrink-swell but there are some locations on the low rural shelf (Figure 1-~~5-6~~) with "moderate to high" characteristics. Moderate identifies soils with shrink-swell in the range of 3 to 6 percent while "high" is in the 6 to 9 percent range. Policies for areas with moderate to high shrink-swell characteristics are as follows:

- (a) County officials will advise builders of the need to have the soils examined and require engineering reports to demonstrate that soils under building foundations will support the intended load.
- (b) The Subdivision Ordinance will include requirements that the shrink-swell, soil permeability, water table and other factors be evaluated as part of the plat review process.
- (c) Approvals of site plans, subdivision plats or other documents proposing the use of land where soil characteristics are unfavorable for development will be withheld where soils are unsuitable for development and where no compensating actions are proposed to compensate for the condition(s).

5. Floodprone Areas, Wetlands, and Natural Habitat Areas

Flood prone areas ~~that are focused on here are the areas tha~~addressed in this Plan have a probability of flooding once every 100 years. Such areas are referred to as the 100-year flood plain. This floodplain overlaps the Chesapeake Bay Resource Protection Area and is subject to a separate set of regulations ~~established~~. Development in floodplains is not as restricted as it is in the Chesapeake Bay RPA, but floodplains are highly sensitive areas and their use development should be ~~done with care to avoid development where property and life may be subject to damage. avoided.~~

Tidal wetlands and natural habitat sites lie along the shoreline or at the headwaters of various rivers and streams ~~although some are found on the tributary streams (Figure 1--7)~~. Both wetlands and habitat sites provide a natural resource for certain rare, threatened or endangered species. These areas are protected by federal laws and may not be disturbed or altered to accommodate man-made activities.

Policies for flood prone areas, wetlands, and natural habitat areas are as follows:

- (a) Residential subdivisions or other developments involving buildings designed for human occupancy ~~shall not be~~must meet County requirements ~~established where any establishing the required height of any~~ occupied floor area of a building ~~is no lower than eight (8) inches below~~above the 100-year floodplain level. Other uses not covered by RPA and County regulations that may be permitted within the floodplain shall be guided by the performance standards of the Federal Emergency Management Administration.
- (b) Point sources of pollution are not to be established in or designed so that they discharge waste into floodprone areas.
- (c) New lands that may from time to time be delineated as "wetlands" or "habitat sites" are subject to the same conditions as land that currently lies within the Resource Protection Area.
- (d) Public access areas developed to increase the recreational use of public waters and other natural resources of the State are to be planned within the framework of the performance standards of the Resource Management Area and/or the Resource

Protection Area, as the case may be.

- (e) The 100-year flood zone, wetlands and habitat sites shall be identified on proposed plats or development plans.

~~6.~~ **Historic and Archeological Resources** MOVE 6. Historic Resources TO CHAPTER 3

~~Thirteen sites within Northumberland County are designated as "Historic Landmarks" and are listed in the Virginia Landmarks Register and the National Register of Historic Places. Two of these sites, Heathsville and Reedville, have been designated as "Historic Areas."~~

~~Additional sites of historic interest have been identified in connection with surveys done in advance of state highway projects. VDOT is now required to identify sites that potentially have historic significance whenever a major project is in the planning stage. Sites that are identified are recorded in a data base held by the Virginia Department of Historic Resources. If a particular site meets certain requirements, it may be "nominated" for the National Register of Historic Places. Once a site is accepted and recognized as an historic landmark, it is then protected by law from destruction or significant modification. The primary focus of this plan relative to historic and archeological sites is on those facilities that are accepted for the National Register at present or in the future.~~

~~Policies for historic and archeological sites are as follows:~~

- ~~(a) No development shall be permitted that would result in the removal or modification of an established historic landmark or a building within a historic district except within the policies established in Section 15.1-503.2 of the Virginia Code.~~
- ~~(b) Continue the identification of historic and archeological sites by completing a county-wide inventory as provided through the Virginia Department of Historic Resources. Based on the findings of that study, prepare a historic resources management plan as a component of the Comprehensive Plan.~~

76. **Chesapeake Bay Protected Areas**

The overlap between the Chesapeake Bay Act Protected areas and wetlands, habitat areas and 100-year flood zones has been noted. In most cases all of these conditions are contained within the Resource Protection Area and its 100-foot buffer strip. As an overlay zone in the County's zoning regulations, the RPA places restrictions on the use of affected lands within the RPA. These regulations offer considerable protection from uses that would be harmful to the natural habitat of aquatic life and water fowl in addition to protecting the waters of the Chesapeake Bay and its tributaries.

Policies for the Chesapeake Bay Protected Areas are to:

- (a) ~~Continue to refine~~Identify the RPA ~~as on~~ individual development plans and subdivision plans ~~are~~ submitted to the County for review and approval with and specific RPA boundaries ~~are~~ defined by engineering studies or surveys.
- (b) Continue to administer the performance standards of the Chesapeake Bay Ordinance.

87. Protection of the County's Groundwater Supply

~~The major source for drinking water in Northumberland County is the water table aquifer—the aquifer closest to the surface. While there are deeper aquifers which have the capability of providing water for large users, individual wells almost always come from this upper aquifer. It is also the one that~~ The residents of Northumberland County obtain their drinking water chiefly from three sources: (from shallowest to deepest) the surficial (water table) aquifer, th Chickahominy-Piney Point artesian aquifer, and the Rappahannock artesian aquifer system (made up of the Aquia, Brightseay, and Upper Potomac aquifers). The surficial aquifer serves as a water supply for domestic water users who utilize shallow, large-bore wells. This aquifer is the one most vulnerable to ~~pollution~~ pollutants from failed septic tanks, ~~leaky fuel tanks~~ leaking storage tanks, agriculture runoff, and a variety of other point and non-point sources of pollution.

The deeper, artesian aquifers increasingly provide water for domestic, commercial, and public water systems. These aquifers are less vulnerable to pollution from surface sources than the surficial aquifer, but they are limited ultimately in the quantity of water available for withdrawal.

Currently there is a requirement that if a subdivision has more than 14 lots on one well, it must be established as a public water supply subject to Health Department regulations. However, there are subdivisions in the County that are currently served by unregulated, private wells where no periodic testing is required.

~~The primary water quality management strategy of the County is to try to stop as much pollution as possible before it reaches the water table aquifer. This strategy emphasizes this upper aquifer because that is the one most affected by county development and subject to some regulation by the county government. The lower aquifers are recharged farther upland and therefore County policies would have little influence on the quality of water at the recharge sites.~~

The water-supply management strategy of the County as two goals:

- 1). Protect the surficial and artesian aquifers from pollution; and
- 2) Ensure the long-term availability of groundwater from the artesian aquifers.

The first goal secures safe and sanitary water for the residents of the County, and the second goal provides for an adequate supply of water.

Policies for the protection of potable water from pollution are as follows:

- (a) The County recognizes that the Virginia Department of Environmental Quality and Health Department monitor the installation of systems for withdrawals of groundwater. Monitoring of water quality, especially nitrate concentrations in shallow wells and sodium and chloride concentrations, as well as water levels in artesian wells should be increased. The County intends to maintain liaison with and cooperate with these agencies to identify potential groundwater pollution problems.
- (db) In cooperation with the Department of Environmental Quality, the application of agricultural chemicals shall be monitored to ensure that they follow an approved nutrient management plan and Best Management Practices.

- (c) ~~The Health Department should continue to inspect septic tanks for proper functioning from time to time. When septic tanks are found to be defective so as to~~Malfunctioning sewage disposal systems present a health hazard to the water supply; appropriate action should be ~~ordered~~initiated to remedy the problem.
- (d) Continue to work with the Bureau of Shellfish Sanitation to survey and monitor the health of shellfish growing areas in County waters and take necessary actions to support this industry.
- (e) The policy which requires each residential development site to provide an adequate septic tank drain field, plus a ~~back-up~~reserve drain field, both acceptable to the Health Department, shall be continued.
- (f) The County will cooperate with the DEQ in locating and causing the replacement of defective underground storage tanks.
- (g) Areas around wellheads used for public and private water ~~supply~~supplies shall be protected from land uses that could contribute to the pollution of the aquifers.
- (h) Subdivisions with more than 14 lots should be required to have either a single public water supply or individual wells.
- (h) Non-point pollution sources will be reduced through monitoring of operations that produce such pollution.
- (i) Point sources of pollution are to be addressed by upgrading existing point sources of pollution to ameliorate threats to the water systems and by imposing strict controls on the establishment of new point sources. Specific policies for point sources are:
- (1) Existing underground fuel-storage tanks made of unprotected steel are to be replaced immediately after any finding that they have been or are leaking. As these and other tanks intended for storage of hazardous or -polluting materials are added or replaced, the new or replacement tanks shall be constructed of materials sufficient to protect against future leakage.
 - (2) When major public facilities such as waste water disposal facilities, landfills or sewage treatment plants are constructed, they shall be designed and constructed with appropriate protective devices to assure that they will not create a hazard to the underground water supply, watersheds or other environmentally-sensitive areas.
 - (3) Known sources of pollution with emissions in excess of what is permitted by applicable state and local regulations are to be upgraded or replaced to bring any point source pollution deficiencies into compliance.
 - (4) New commercial and/or industrial uses to be established within the County shall be constructed so as to produce no net increase in: pollutants to water or air; storm water discharge; chemical contaminants of any type; or any other condition that will be detrimental to state waters.

- (5) Increase the knowledge of citizens concerning the ~~Health Department's advisability- of program for~~ testing individual wells on a regular basis.
- (6) Establish specific policies for the handling and disposal of hazardous materials and for seepage from large trash piles.

Policies for providing an adequate supply of potable water are as follows:

- (a) For large water users, a groundwater withdrawal plan shall be submitted as part of the documentation for new subdivisions and commercial places, and such plans shall have the approval of appropriate state agencies. Major water withdrawals shall be made from the lower aquifers or from reservoirs.

(b) Other policies are addressed in Chapter 4.

98. **Watershed Protection**

The protection of the watersheds involves groundwater protection (discussed in the preceding item) and prevention of pollution in the Chesapeake Bay. The protection of the Bay is served by reducing the amount of runoff and groundwater discharge. ~~because~~ Less runoff means less soil erosion and consequently fewer pollutants entering the Bay by monitoring a 100 foot RPA. Clearly, the preferred land use practices are those that reduce the amount of surface water and groundwater reaching the major rivers and Chesapeake Bay.

Policies for the protection of watersheds include:

- (a) Any development or use of land shall be done in such a way as to preserve the integrity of the existing watershed, and in general drainage facilities may not be designed to change the course of water from one watershed to another.
- (b) Sites intended for new development shall be designed in such a way that their post-development performance meets the criteria set forth by CBLAB and other state agencies in the following areas:
 - (1) soil erosion and sedimentation
 - (2) rainwater infiltration
 - (3) nutrients used
 - (4) indigenous vegetation
- (c) Enforcement of RPA and RMA regulations designed to filter runoff through buffers and to manage development so as to minimize stormwater runoff is to be continued. The use of riparian buffers bordering waterways so as to intercept groundwater discharge should be encouraged.

~~10.~~ **Soil Conditions**

~~The condition of soil plays an important role in the water protection. Permeability is perhaps the most significant quality of soil to the groundwater. This factor determines how fast water percolates through the soil. State guidelines suggest that a permeability range from 0.6 to 6.0 is acceptable for septic tanks. A lower permeability results in water passing through the soil too fast and a higher permeability prevents water from passing through the soil at all.~~

~~The water table is another important factor. In areas where the water table is less than 24 inches, septic tank fields could actually be below the water table and ineffective during periods when the water table saturates the soil where the drain field is located.~~

- ~~(a) Development in locations with unfavorable permeability or with excessively high water table is to be discouraged, if not prevented in those parts of the County having those conditions.~~
- ~~(b) Land with slopes in excess of 15 feet slope per 100 feet are to be developed with caution, and slopes in excess of 20 feet slope per 100 feet are to be avoided unless it can be demonstrated that such development will not result in excessive soil stability and erosion.~~

~~119.~~ **Shoreline Preservation**

Shoreline erosion documented by VIMS in its Shoreline Situation report is significant within Northumberland County. Particularly affected are the shorelines exposed to the Chesapeake Bay (Figure 1-~~12-17~~). VIMS reported that erosion was taking place at rates of two feet or more per year in just about all of the County's shoreline that is exposed directly to the Potomac River and the Chesapeake Bay. Greater rates of erosion have occurred as a direct result of northeaster storms and hurricanes.

In April 2003 VIMS published a Northumberland County Dune Inventory. Approximately 6.3 miles of dune shore consisting of 59 separate dunes were identified in the County. These are on the Chesapeake side and the Potomac River Side of Smith Point. Dunes reside in areas of sand accretion and stability, such as around tidal creek mouths, embayed shorelines, in front of older dune features, as washovers, as spits and against man-made structures like channel jetties or groin fields.

Dunes act as a reservoir of sand which can buffer inland areas from the effects of storm waves and, in the process, act as natural levees against coastal flooding. Dunes are protected under the Coastal Primary Sand Dune Protection Act of 1980 and , where they occur, are valuable assets in shoreline preservation.

While shoreline erosion of exposed shorelines is almost entirely a result of natural events such as waves, rising sea level and land subsidence, there are some actions that can be taken both by individuals and through County policies that can mitigate or delay the adverse effect of shoreline erosion.

Some of ~~these~~ the actions that can be taken are identified below:

~~(a) VIMS will be requested to update the "Shoreline Situation" report within Northumberland County in order to document the present shoreline situation.~~

~~(b)~~ Tidal marsh areas are to be protected and expanded through enforcement of wetlands regulations and through the addition of wetlands to the inventory as they are delineated in detail as part of the review process.

~~(e)~~ Vegetation as an alternative to structures is to be promoted as erosion prevention mechanisms. A list of plants suitable for brackish or estuarine systems is given in Chapter IV of the CBLAD's Local Assistance Manual (p.VI-65).

~~(d)~~ Shoreline protective measures should be planned for each subdivision rather than relying on individual owners to provide their own protection. Independent structures may often have adverse effects on adjoining properties. Also, wherever possible, vegetative approaches to erosion control are preferred over structures.

(d) Establishing No Wake zones in narrow creeks, near marinas and near large wetlands.

12. **Policies Concerning the Use of Waterfront Areas while Preserving Sensitive Environmental Areas**

State and County policies regarding use of waterfront areas favor additional use of the Chesapeake Bay and its major tributary rivers for recreational use. A study of shoreline access is presented in the Chesapeake Bay Area Public Access Plan which covers all of the states which border on the Chesapeake Bay and its major river tributaries. While it is one policy of the Commonwealth of Virginia to encourage responsible additional recreational use of the rivers and the bay, it has other policies which are designed to protect the shorelines from harmful erosion together with the sensitive marshes and wetlands which border tidal

waters. Accordingly, the following policies are established by Northumberland County to promote the use of selected waterfront areas for additional public recreation:

- (a) ~~The County plan for water access outlined in Chapter 4 shall be implemented. The County will cooperate with the State in use of present state-owned boat landings to ensure that the sites are well-maintained and properly used in ways that will not increase pollutants entering state waters.~~
- (b) ~~The County will request that the State upgrade some existing boat ramps and add others where needed. The emphasis should be on improving boat docking space near ramps, expanding the opportunity to enjoy natural marine resources and expanding parking for boat trailers.~~
- (eb) The regulations of the RPA, will be expanded to establish or expand performance standards for piers, boat houses and other structures designed to serve boat traffic.
- (dc) Alternate techniques to the use of bulkheads and rip-rap for protecting shorelines will be offered through the use of vegetation and other natural devices. ~~Techniques are explained in Chapter IV of the Local Assistance Manual (CBLAB).~~
- (e) ~~Building setback from the shoreline will be varied according to the shoreline erosion experience of a particular area. In areas unprotected by stabilizing structures or vegetation, additional setback should be provided in addition to the standard setback of a zoning district. The required setback should be on a sliding scale keyed to the experience of shoreline erosion and specific physical conditions.~~
- (d) Restroom facilities should be considered for busy public water access locations during boating season, e.g. Shell Landing, Lodge Creek, and Crane's Landing.

1311. Policies Relative to Intensively-developed Areas

Northumberland County does not have an area that would be classified as intensively developed. The most intensively-developed area within the County is in Reedville which has a residential density that averages 1.14 lots per acre. This is considerably under the criterion of four dwellings per acre that is required to qualify as an intensively-developed area by CBLAD's criteria.

The following policies are for the purpose of providing guidelines for development within the village areas:

- (a) All development within the villages will be subject to review and approval on an individual project basis. This review shall include the proposed site plan and the use of property to assure that new development, including redevelopment of existing uses, is consistent with policies established to protect state waters as well as to promote the goals of the County for economic development and to serve the public health, safety and general welfare of the County.
- (b) Management of storm or other water discharged from each site shall be performed in a manner that the run-off meets the requirements as to quantity and nutrients of the Resource Management Area of the Zoning Ordinance.

- ~~(e) — Each site shall be designed to promote greater safety during ingress and egress between public roads and individual properties, and insofar as possible circulation within each development shall make arrangements for traffic to move between one business area and another without the need to re-enter the highway in order to move from one business to an adjacent business.~~
- ~~(d) — Major developments designed for large amounts of traffic shall prepare traffic management studies and make appropriate plans to manage traffic between highway and planned use. This may include constructing turning lanes and making other improvements consistent with traffic volumes to be generated.~~
- ~~(ec)~~ If ~~p~~Public sewerage facilities ~~are~~ installed in the villages or in major new developments~~s~~, ~~they~~ shall be designed and constructed consistent with the State's and County's objectives to protect state waters.

1412. Managing Potential Conflicts Between ~~the~~ Land Use ~~Plan~~ and Water Quality Protection

The major focus of potential conflicts between land use and water quality quite naturally lies in those areas where the population is concentrated but also occur on agricultural lands, ~~or most likely to be concentrated, or where land is used for intensive purposes.~~ Among the specific areas more subject to potential conflicts and the possible causes of such conflict are the following:

- (a) Chemicals and other nutrients used on agricultural lands can percolate into the water table and be carried into creeks by groundwater discharge and storm runoff. These contribute to reduction in water clarity and reduction in important underwater grasses. Future uses will be minimized through use of ~~an~~ erosion plans, and nutrient management plans, ~~and integrated pest plan.~~ Best Management Practices, and the establishment of permanent forested buffers are ~~All of these~~ programs ~~are~~ designed to reduce the adverse impact on water quality as a result of agricultural operations.
- (b) ~~Septic tanks~~On-site sewage disposal for residential and limited commercial use, if not properly installed and maintained, can result in both contamination of ground water and in case of extreme failure being carried via runoff to creeks which flow to the Chesapeake Bay. ~~The back-up septic tank provision required of the Chesapeake Bay Act addresses this issue for future development. For existing development the~~The Bay Act requirement to pump septic tanks every five years will help improve groundwater quality. The Health Department issues all ~~septic tank~~sewage disposal system construction permits and ~~monitors~~ inspects them. This, in general, is focused on new buildings construction which is the best time for imposing new requirements. ~~Also, it would be a good practice to regularly inspect all septic tanks and to require pumping or repairs whenever necessary to correct any deficiencies in their operation.~~
- (c) Development of land which abuts tidal waters increases the probability of shoreline erosion as well as diminishing the amount of protective marshlands and wetlands. This potential conflict is addressed by a strategy that discourages the use of property in a way that is potentially detrimental to water quality both in open streams and in the aquifers. The strategy includes: ~~greater setbacks from shorelines which have experienced serious erosion;~~ installation of erosion control structures or plantings that have a demonstrated ability to decrease shoreline erosion; and septic tank and underground fuel storage tank monitoring and/or replacement as necessary to prevent pollution of state waters and related actions.
- (d) Use of modern land planning techniques as a means of preserving open space, including agricultural lands and forests, will minimize the impact of residential development on the environment and on state waters. Such techniques may include: planned unit development, cluster subdivisions with open space preservation, historic landmarks preservation, density zoning and the like. The objective in using these techniques is to permit a similar level of development as would normally be permitted but to improve the efficiency of land utilization.

13. Soil and Water Conservation Policies

Under the new Chesapeake Bay Agreement – Chesapeake 2000, Virginia and the other Chesapeake Bay states and the District of Columbia have agreed to improve water quality sufficient enough to protect the living resources of the Bay and to remove the Bay and its tributaries from the EPA list of “Impaired Waters” by the year 2010. Unlike point sources, where treatment technologies can achieve specified nutrient reductions, non-point source controls are much more difficult to implement and maintain. These non-point source pollution controls encompass multiple strategies and must be placed on land by thousands of landowners, land managers, local governments, and others. An ambitious interstate program is planned.

The non-point source approach under the coordination of the Virginia Department of Conservation and Recreation is to refocus available tools, to steer new resources to Virginia’s strongest non-point control programs, and to push them to maximize reductions across the landscape. These efforts will focus on seven programmatic areas:

1. Agricultural Best Management Practices (BMP) acceleration;
2. Expansion of Nutrient Management Planning and implementation efforts to include urban and mixed open lands;
3. Consolidation and strengthening of the Virginia Stormwater Management Program;
4. Enhanced implementation of the Virginia Erosion and Sediment Control Program;
5. Strengthen implementation of the Chesapeake Bay Preservation Act;
6. Enhancement of NPS Implementation Database Tracking Systems; and
7. Enhance outreach, media, and education efforts to reduce pollution producing behaviors.

The policy and plan of Northumberland County is to support the Northern Neck Soil and Water Conservation District in the implementation of these programmatic areas and to work jointly to develop specific strategies and plans to address these issues.

- C. **MAJOR REGULATORY ELEMENTS OF THE WATER QUALITY PROTECTION PLAN**
1. Chesapeake Bay Act - The Resource Protection Area Regulations: established in the ~~first round of~~ the Chesapeake Bay program will be continued. These regulations provide immediate protection to all tidal wetlands along the shores of streams and to known non-tidal wetlands adjacent to tidal wetlands. As a practical matter, the protected areas extend to most of the major and minor creeks and branches that run throughout the County. This protection area includes a buffer area around all previously defined wetlands which acts as a vegetative *strainer* to pollutants that may otherwise be carried to streams and wetlands by surface runoff and groundwater discharge waters.
 2. Chesapeake Bay Act The Resource Management Area Regulations: The strategy in the RMA (~~all area not in the RPA~~)(The remainder of Northumberland County) is to allow development but under a set of performance standards which are designed to reduce the quantity of potential pollutants that reach the RPAs. This is done by application of Best Management Practices of the State Water Control Board and more intensive review of all building applications.
 3. Subdivision Ordinance: provides the requirements that must be met by developers for establishing a subdivision. This Ordinance references and incorporates sections of the Chesapeake Bay Act.
 34. **The Zoning Ordinance**: offers another tool which will enhance the County's capability of managing development. In addition to the RPAs and RMAs, the overall zoning ordinance strengthens the ability of the County to manage development. A separate ordinance contains floodplain regulations. Many communities incorporate floodplain regulations into their zoning ordinances.
 45. **County-wide Land Use Policies**: are proposed to upgrade over a period of time specific point sources of pollution that either contribute or could contribute to further degradations of the Chesapeake Bay. ~~While the details of this policy would be defined by an operating document, the broad general policies should be along the following lines~~The general policies are as follows as regards water quality:
 - (a) Public and private sewage treatment plants shall be located, constructed and operated in a manner so as to insure against possible contamination of the Bay through operational error or natural disaster. State-of-the-art nutrient removal should be installed in all facilities and upgraded as better technology becomes available.
 - (b) Solid waste landfills, public or private, must comply with the strictest of safety and health requirements and include all state and federal standards.
 - (c) Underground tanks used for storage of chemicals or petroleum products should be monitored according to state requirements. Replacement of faulty tanks with approved materials shall be done within a reasonable time.
 - (d) Land development in areas that are sensitive to erosion and land developed along shorelines or in any other environmentally-sensitive area should be monitored carefully through the administration of site plan review and enforcement of

RPA/RMA regulations.

- (e) Land development for subdivisions is to be encouraged to be designed to preserve open space as—using ~~innovated~~ innovative land development techniques which promote the preservation goals of this plan. ~~Examples are cluster subdivisions, planned unit development, and related design types.~~

THE FOLLOWING PAGES ARE DELETED FROM CHAPTER 5 AND WILL BE RE-WRITTEN AND INCLUDED IN A NEW CHAPTER 6 TO BE PREPARED FOR PUBLIC COMMENT AFTER CHAPTER 3 IS COMPLETED. THESE "IMPLEMENTATION STRATEGIES" WILL ADDRESS ALL THE SECTIONS OF THE COMP PLAN AND DO NOT BELONG AS PART OF THIS CHAPTER

~~D. IMPLEMENTATION STRATEGIES FOR THE WATER QUALITY PROTECTION PLAN~~

The following steps are suggested as a framework for implementing the goals and strategies of this plan:

~~1. Legislative and Policy~~

- ~~(a) Adoption of this plan as an element of the Comprehensive Plan.~~
- ~~(b) Review and update the Zoning Ordinance and other development ordinances in order to incorporate the concepts of this plan into appropriate land use legislation.~~
- ~~(c) Incorporate the flood zone areas established by FEMA into the zoning ordinance as part of the Zoning District Map and regulations.~~
- ~~(d) Establish a policy relative to replacement of underground fuel storage tanks.~~
- ~~(e) Adopt provisions in the new zoning ordinance regulating the development of commercial campgrounds and marinas at locations where wetlands, marshlands, shorelines and habitat areas are not threatened.~~
- ~~(f) Authorize staff to establish the administrative processes required to incorporate the policies of this plan and ordinance amendments resulting from the plan into the normal routine of enforcement and administration.~~

~~2. Administrative~~

- ~~(a) Establishing a data base for monitoring applications, special permits and zoning changes associated with the zoning ordinance.~~
- ~~(b) Continuing to rely on the State's resources for administering any areas of this plan where they have established resources for such administration.~~
- ~~(c) Monitor the practices of application of agricultural nutrients and enforce Best Management Practices as appropriate.~~

- ~~(d) — Continue to enforce Regulations of the Resource Protection Areas and Resource Management Areas.~~
- ~~(e) — Establish Best Management Practices to prevent excessive runoff from agricultural lands and developed areas from discharging contaminating chemicals or other pollution sources into public waters from both point and non-point sources where practical.~~
- ~~(f) — Continue administration of regulations in the RPA and RMA designed to prevent destruction of wetlands, enhance the quality of runoff through buffer zones and retention facilities, and the like.~~

~~3. — Coordination~~

- ~~(a) — Continue to rely on the State's resources for administering provisions of this plan where they have the authority and administrative resources for such administration.~~
- ~~(b) — Cooperate with the DEQ and State Health Department in the enforcement of regulations that apply to wells and other withdrawals from groundwater sources.~~
- ~~(c) — Coordinate and cooperate with the State in use of present state-owned boat landings.~~
- ~~(d) — Request that the State upgrade public boat landings.~~

~~4. — Development~~

- ~~(a) — Continue to administer regulations in the Resource Protection Areas and Resource Management Areas designed to prevent destruction of wetlands and to enhance their value by filtering runoff through buffers and managing development within the Resource Management Area to minimize run-off from land use.~~
- ~~(b) — Continue to require each development site to provide an adequate septic tank drain, plus a back-up drain field, both acceptable to the Health Department.~~
- ~~(c) — Continue to review all proposed development plans for conformity with Chesapeake Bay RPA/RMA regulations and Best Management Practices of the DEQ.~~

~~5. — Planning~~

- ~~(a) — Continue to develop planning strategies designed to promote the protection of the tidal marsh area.~~
- ~~(b) — Update the Zoning Ordinance and other development ordinances in order to incorporate the concepts of this plan into appropriate land use legislation.~~
- ~~(c) — Review and update the Comprehensive Plan including this component at regular intervals not to exceed five years.~~

IMPLEMENTATION STRATEGY FOR LAND USE POLICIES			
TOPIC	STRATEGIES	IMPLEMENTATION TOOLS/ POLICIES	TIME TARGETS
		3	4
1. Use and Development of Land	<p>A-1. Establish a "Village Concept" in the land use plan. This will encourage clustering of higher intensity land uses that provide public services and utilities more efficiently and better meet the needs of the citizens of the County.</p> <p>A-2. Establish guidelines designed to direct growth to areas with fewer physical constraints while promoting the preservation of croplands, forests and sensitive environmental areas.</p> <p>A-3. Identify sites within major traffic corridors where businesses and industries may be established without diminishing the quality of existing development. Dispersed sites throughout the County may be preferred to a single business complex.</p> <p>B-1. Establish guidelines that promote land use and development practices designed to preserve the rural character and qualities of the County.</p> <p>B-2. Establish site planning guidelines for subdivisions along shorelines including how they interface with agricultural and forestry lands.</p>	<p>-LR</p> <p>-LR</p> <p>-CP, LR, BR, AA, SP, IG, LP</p> <p>-LR, LP</p> <p>-CP, LR, AA</p>	<p>⊥</p> <p>⊥</p> <p>⊥</p> <p>⊥</p> <p>⊥</p>
2. Topographic Conditions that Limit Development	<p>1. Adopt land use policies with incentives that encourage developers to avoid building sites located on steep slopes. Through techniques such as cluster development, protective easements or other arrangements, the policies should provide incentives for preserving forests, agricultural activities, dunes and other environmental features.</p> <p>2. Where development on slopes cannot be avoided, policies may require that mitigating engineering solutions be installed to reduce disturbance of the slopes. The Erosion and Sediment Control Ordinance and Chesapeake Bay Preservation Regulations are major tools in implementing this strategy.</p>	<p>-LR</p> <p>-LR</p>	<p>⊥</p> <p>⊥</p>
3. Soil Suitability for Septic Tanks	<p>A-1. In areas not served by public sewers, use innovative land planning techniques as incentives to encourage preservation of areas that are otherwise unsuited for development.</p> <p>B-1. Establish through zoning appropriate density regulations and other planning requirements to ensure that development does not exceed the capacity of the land.</p>	<p>-CP, LR</p> <p>-LR, LP</p>	<p>⊥</p> <p>⊥</p>

³Abbreviations in this column are used to represent the following words or terms:

- | | | |
|-------------------------------|--|--------------------------------|
| CP = Comprehensive Plan | LR = Land Use & Chesapeake Bay Regulations | ST = Special study |
| AA = Administrative Action | BR = Brochure/advisory paper | LP = Land planning/engineering |
| CE = Code Enforcement | FA = Financial Assistance/Grants | CB = Capital Budget |
| GP = General Policy of County | IG = Intergovernmental Coordination | |

⁴ I = Immediate priority; L = Longer term priority.

IMPLEMENTATION STRATEGY FOR LAND USE POLICIES			
TOPIC	STRATEGIES	IMPLEMENTATION TOOLS/ POLICIES	TIME TARGETS
	<p>B 2. — Require in the subdivision regulations that each lot be tested for percolation as well as for adequate separation between the disposal field and the water table to prevent contamination of the aquifer.</p> <p>C 1. — Recommend to the Health Department that alternate strategies for sewage disposal systems be identify and evaluated.</p> <p>C 2. — Evaluate the feasibility of providing/expanding public sanitary sewers services to the villages with higher concentrations of residential and business uses.</p>	<p>LR</p> <p>GP, AA</p> <p>ST</p>	<p>±</p> <p>±</p> <p>±</p>
4. Structural Qualities of Soils	<p>1. — Advise builders and developers of the need to examine shrink swell qualities of soils before committing to buildings or roads on a specific site. Make information that is available to the County, such as soil surveys, available to individuals and developers.</p> <p>2. — Include requirements for evaluating shrink swell soil qualities; water table; soil permeability and other factors in the plan review process.</p>	<p>AA</p> <p>AA</p>	<p>±</p> <p>±</p>
5. Flood Prone Areas	<p>1. — Provide awareness and instructions to citizens advising of the potential dangers of establishing new buildings within flood prone areas.</p> <p>2. — In cases where the use of flood prone areas is acceptable, establish performance guidelines for new development within identified floodplains that limit the types of land uses that may be established in floodplains.</p> <p>3. — Continue to administer the County's Floodplain Management Ordinance and review it from time to time to ensure that it is in conformity with the latest FEMA guidelines.</p> <p>4. — Continue to administer the County's Subdivision Ordinance and Soil and Erosion Control Ordinance to provide, where needed, flood control devices and other improvements necessary to protect property from flooding.</p> <p>5. — Avoid establishing wastewater disposal systems and utilities in or adjacent to flood plains.</p>	<p>AA</p> <p>LR</p> <p>AA</p> <p>AA</p> <p>AA</p>	<p>±</p> <p>±</p> <p>±</p> <p>±</p> <p>±</p>
6. Wetlands and Natural Habitat Areas	<p>1. — Maintain a current inventory of all Natural Heritage Sites for review when processing development plans. As part of the process, require developers to obtain assurances from other agencies having jurisdiction to the effect that habitat sites will not be disturbed.</p> <p>2. — Continue to administer wetland regulations and Chesapeake Bay regulations. Require developers to delineate wetlands and natural habitat areas as part of the submission requirements of development or subdivision plans.</p> <p>3. — Establish incentives to encourage individuals to participate in the preservation of natural habitat areas, the scenic values of the County's shoreline and other environmentally sensitive areas.</p>	<p>IG</p> <p>LR, AA</p> <p>LR</p>	<p>±</p> <p>±</p> <p>±</p>
7. Historic and	<p>A 1. — Continue the process of establishing historic districts to recognize sites that are on the National Register of Historic Places.</p>	<p>CP, AA, IG</p>	<p>±</p>

IMPLEMENTATION STRATEGY FOR LAND USE POLICIES			
TOPIC	STRATEGIES	IMPLEMENTATION TOOLS/ POLICIES	TIME TARGETS
Archeological Resources	A 2. — Identify additional sites that may be eligible for the Federal and State Registers and prepare documentation for nominating them to the registers.	-ST, IG	⊥
8. Chesapeake Bay Protected Areas	1. — Continue to administer the performance standards and regulations of the Chesapeake Bay Preservation Ordinance. 2. — Continue to coordinate the efforts of the County with those of CBLAD and other State agencies concerned with water quality protection.	-LR -IG	⊥ ⊥
9. Groundwater Supply	A 1. — Monitor septic tanks with emphasis on replacement or repair of failing systems. A 2. — Require sufficient separation between a septic tank field and the water table to protect against aquifer contamination. A 3. — Cooperate with the Virginia Department of Environmental Quality to locate defective underground storage tanks, replacing them with tanks of approved materials. B 1. — Establish water preservation guidelines to cover very large withdrawals from the deep aquifers, particularly those close to the shore, including observations concerning major water withdrawals in other jurisdictions. B 2. — Promote the testing of individual wells (Health Department) for compliance with water quality standards. B 3. — Delineate wellhead protection areas for active public water supply wells. Establish limitations on the types of land uses allowed within the protected area and develop a contingency plan for dealing with accidents.	-IG -IG -IG -IG -IG	⊥ ⊥ ⊥ ⊥ ⊥
10. Water Pollution Sources	1. — Monitor the application of pesticides and agricultural chemicals through a "nutrient management plan" ⁵ and Best Management Practices. 2. — Establish a county policy on handling, storage, transporting and siting of hazardous materials and wastes (see also Strategy 11-5). 3. — Establish county policies governing the location, installation and operation of large commercial activities including: animal raising, sludge disposal, lagoons, landfills, and similar activities through zoning permits and other local regulations. 4. — Coordinate and cooperate with the Department of Environmental Quality in the administration of	-LR -GP, IG -LR, IG -IG	⊥ ⊥ ⊥ ⊥

⁵Oversight by the U. S. Soil Conservation Service.

IMPLEMENTATION STRATEGY FOR LAND USE POLICIES			
TOPIC	STRATEGIES	IMPLEMENTATION TOOLS/ POLICIES	TIME TARGETS
	<p style="text-align: center;">pollution abatement permits:</p> <p>5. Establish policies and guidelines concerning the use and reclamation of land used for sand and gravel mining.</p>	GP, IG	±
11. Watersheds	<p>1. Apply performance standards of the RMA and strengthen them for individual watersheds if necessary to deal with special conditions in more intensively developed areas.</p> <p>2. Make use of the Best Management Practices as established by the Department of Environmental Quality (formerly the Water Control Board).</p> <p>3. Establish review standards for all major developments, including activities which require state-issued Pollution Abatement Permits, for reducing the impact of such uses on the water quality.</p> <p>4. Apply Best Management Practices as established by the Department of Environmental Quality to reduce pollution from development and use of land throughout all watersheds.</p> <p>5. Establish contingency plans, including transportation routes, for dealing with an emergency resulting from the use or transportation of hazardous materials (see also strategy 10-2).</p>	LR, IG LR, IG LR, IG LR, IG LR, GP, IG	± ± ± ± ±
12. Soil Conditions	<p>1. Manage development so as to minimize the use of land with high water tables and poor soils for septic tanks use.</p> <p>2. Establish development policies that limit development on slopes greater than 15 percent and prevent development where slopes are 20 percent or greater.</p> <p>3. Establish zoning and subdivision policies to provide incentives that encourage the use of innovative land planning techniques. The incentives should be designed to discourage development of areas with poor soils, high water tables, steep slopes or areas with other environmental constraints.</p>	IG LR LR	± ± ±
13. Shoreline Conditions	<p>1. Preparation of guidelines for developing subdivisions involving shorelines can be incorporated into the Subdivision Ordinance. The guidelines would provide techniques for shoreline development and use which improve the shorelines resistance to erosion.</p> <p>2. Require greater erosion protection along shorelines where the known rate of erosion is excessive. Such protection might be structural (i.e., bulkheads) or regulatory (i.e., additional zoning setbacks).</p> <p>3. Establish standards for construction which modify the shoreline, such as: bulkheads, piers and boat houses.</p> <p>4. Promote the use of vegetation as an alternate to construction for the control of shoreline erosion.</p> <p>5. Continue to administer requirements of the Chesapeake Bay Resource Protection Area regulations to preserve marshlands, wetlands and other sensitive environmental features from erosion or destruction.</p>	LR LR LR, AA LR, IG	± ± ± ±

IMPLEMENTATION STRATEGY FOR LAND USE POLICIES			
TOPIC	STRATEGIES	IMPLEMENTATION TOOLS/ POLICIES	TIME TARGETS
14. Access to Public Waters	1. Request that the State develop additional public boat ramps and upgrade existing ramps with better boat handling facilities and parking.	-IG	-I
	2. Identify areas of shoreline to be targeted for development with facilities for tourists, including resort motels/boatels and similar enterprises.	-AA	-I